Brian C. Camey

PROFESSIONAL HISTORY:

Risk Management Professionals, Inc.
Irvine, California; Project Engineer

EDUCATION:

Bachelor of Science, Mechanical Engineering,
California State Polytechnic University, Pomona

Master of Science, Mechanical Engineering, California
State Polytechnic University, Pomona

CERTIFICATIONS:

Engineer-In-Training (EIT) – California

PROFESSIONAL AFFILIATIONS:

Society of Hispanic Professional Engineers (SHPE)

American Institute of Chemical Engineers (AIChE)

Mr. Brian Camey graduated from the California State Polytechnic University, Pomona (CPP) with a Bachelor and Master of Science degree in Mechanical Engineering. Currently, Mr. Camey provides technical support as a Project Engineer for Risk Management Professionals.

In addition to his work with clients, Mr. Camey has been involved in educational outreach and has strived to improve the product lines provided by Risk Management Professionals. In Spring 2023, Mr. Camey participated in the 19th Global Congress on Process Safety (GCPS) at the 2023 AIChE Spring Meeting, where he presented posters on "Putting Compressor Failures Into Perspective for the PHA" and "Tips to Streamline Your PHA (and Your Investment)."

Since joining Risk Management Professionals, Mr. Camey has been involved in multiple aspects of United States Environmental Protection Agency (US EPA) Risk Management Plan (RMP), Occupational Safety and Health Administration (OSHA) Process Safety Management (PSM) Program, California Accidental Release Prevention (CalARP) Program development, and Nevada Chemical Accidental Release Prevention (NCAPP) program, including the following:

- Process Hazard Analyses (PHAs) including Hazard & Operability (HAZOP) studies, Layer of Protection Analysis (LOPA) studies, and Management of Change (MOC) PHAs
- Toxic and Flammable Gas and Liquid Dispersion Modeling
- Piping and Instrumentation Diagram (P&ID) Development and Field Verification
- Risk Management Plans (RMP) / Process Safety Management (PSM) Programs
- California Accidental Release Prevention (CalARP) Program
- Regulatory Compliance Auditing and Support

While Mr. Camey has experience in diverse product lines, all completed projects have used high-end qualitative and/or quantitative risk analysis techniques for decision-making. He has been involved in a variety of engineering projects across several industries, including the following:

- Petroleum (Production, Storage, Refining)
- LPG Transportation and Storage
- Renewable Fuels (Production, Refining)
- Wastewater Treatment and Distribution Systems
- Chemical Manufacturing
- Ammonia Refrigeration Systems

PROJECT EXPERIENCE

Process Hazard Analyses (PHA)

Mr. Camey has been involved in several PHAs using the HAZOP, LOPA, and What-If/Checklist methodologies for refineries, renewable fuel plants, and mineral extraction facilities as well as for other industry sectors. The following is representative of the projects that Mr. Camey has provided technical support for in the conceptual design stage, detailed design stage, and operating cycle.

- *Fuel Gas Treating System, Refinery, Garyville, Lousiana* – Provided facilitation support for the five-year PHA involving the 500,000 barrels per day (bpd) refinery's fuel gas treating system which encompassed parallel trains of treaters that supply fuel gas to a large section of heaters at the refinery. The study focused on development and review of potential new equipment failures and revision of existing equipment failure scenarios that could result in hazardous consequences.
- *Molecular Sieve Dryer Unit and Selective Hydrogeneration Process, Refinery, Corpus Christi, Texas* – Provided facilitation support for a HAZOP/LOPA study of a 160,000 barrels per day (bpd) refinery. The scope included four (4) units in total, one (1) molecular sieve dryer unit, one (1) selective hydrogeneration process unit, one (1) alkylation unit, and one (1) methyl tert-butyl ether (MTBE) unit. The study was unique as the facility had recently adopted the LOPA methodology and was effective in identifying deficiencies driven by this approach. The study involved a rotating team of facility personnel to provide coverage for several domains that were directly affected upstream and downstream of these units.
- *Hot Oil Unit, Refinery, Catlettsburg, Kentucky* – Provided on-site support for a HAZOP/LOPA study of a 291,000 barrels per day (bpd) refinery. The study focused on potential equipment failures, inadvertent operator actions, and external events that could result in hazardous consequences.
- *Selective Catalytic Reduction (SCR) System, Biomass-fueled Electric Generation Plant, Stockton, California* – Facilitated the five-year PHA involving the power plant's SCR utilizing ammonia to remove NOx from emissions produced while producing power to a

large area surrounding Stockton. The study focused on potential equipment failures, inadvertent operator actions, and external events that could result in hazardous consequences.

- *Wastewater Treatment Plant, Refinery, Salt Lake City, Utah* – Facilitated the PHA involving updates of the refinery's Wastewater Treatment Plant to meet internal standards utilizing HAZOP/LOPA methodology. The study focused on development and review of potential new equipment failures and revision of existing equipment failure scenarios that could result in hazardous consequences.
- *Biofuels Production Plant, Midwest, USA* - Provided HAZOP support for the feasibility design of a grassroots biofuels production facility, which included careful review of a number of different processes such as hydrodeoxygenation (HDO), acid condensation, fractionation, caustic treating, organics/light ends recovery, and hydrotreating.
- *Amine and Sulfur Recovery Units, Refinery, Garyville, LA* – Provided onsite HAZOP/LOPA technical support for 500,000 barrels per day (bpd) refinery in Louisiana. The scope included (seven) units in total, one (1) sulfur recovery unit and three (3) amine recovery units. A unique approach was taken in the analyzation of the three 'sister' sulfur recovery units in which the units were mirrored and evaluated for differences in both design and operation. In doing so, discrepancies between the units were studied to optimize efficiency of operation and uncover latent hazards.
- *Hydrogen Unit Renewables Conversion Project, Refinery, Martinez, CA* – Provided remote technical support for a unit MOC PHA for the Hydrogen Unit including HAZOP analysis in accordance with Contra Costa County ISO requirements to identify any hazards as part of the facility's conversion to renewable fuels. This includes post-session documentation such as HAZOP report development. The study lasted two (2) days and was completed remotely in coordination with the engineering contractors and facility personnel.
- *Copper Leaching System, Morenci, AZ* – Provided on-site HAZOP technical support over the course of two (2) days for an acid to agglomeration system for copper leaching. Also, provided scribe support in the development of the Piping and Instrumentation Drawings (P&ID's) for the analyzed system. The PHA was conducted onsite working with engineering contractors and facility personnel.
- *Tank Farm Unit, Bakersfield, CA* – Provided onsite HAZOP/LOPA technical support over the course of four (4) days for a propane, butane, and naphtha storage system. This includes pre-session preparation such as noding and precausing and was conducted onsite working with engineering contractors and facility personnel.

- *Gasoline, Ethanol, and Diesel Storage Tanks Unit, Martinez, CA* – Provided onsite HAZOP/LOPA technical support over the course of five (5) days for the gasoline, ethanol, and diesel storage tanks along with the associated equipment. This includes post-session documentation such as HAZOP/LOPA/HCA report development and was conducted onsite working with engineering contractors and facility personnel.
- *Renewable Fuel Unit, Bakersfield, CA* – Provided onsite HAZOP/LOPA technical support over the course of four (4) days for a renewable fuel unit consisting of a deeethanizer, debutanizer, and depropanizer to produce renewable diesel. The PHA was conducted onsite working with engineering contractors and facility personnel.
- *Naphtha Storage Tanks, Martinez, CA* – Provided onsite HAZOP/LOPA technical support for the naphtha storage tanks along with cooling water tower and water treating chemicals over the course of two (2) days. This includes pre-session preparation such as noding and precausing and post-session documentation such as HAZOP/LOPA report development. The PHA was conducted onsite working with engineering contractors and facility personnel.
- *High Pressure and Low Pressure Flare System, Bakersfield, CA* – Provided onsite HAZOP/LOPA technical support over the course of two (2) days for a high pressure and low-pressure flare system for the renewable conversion of a former fossil fuel refinery in Bakersfield, CA. This includes pre-session preparation such as noding and precausing and the PHA was conducted onsite working with engineering contractors and facility personnel.
- *Boilers, Garyville, LA* – Provided onsite HAZOP/LOPA technical support for a total of two (2) Boiler Units and associated auxiliary systems. This study included analysis of dual-operating water softener systems as well as high and low-pressure deaerators. The study involved a rotating team of personnel to provide coverage for the several domains that were directly affected by each boiler.
- *Natural Gas and Fuel Gas, Bakersfield, CA* – Provided onsite HAZOP/LOPA technical support for the renewable conversion of a former fossil fuel refinery in Bakersfield, CA. Major pieces of equipment evaluated during the study included propane/butane bullets, diesel storage tanks, and multiple interconnected vapor recovery systems. This study involved a detailed review of the issued for construction (IFC) P&IDs to ensure the accurate depiction of the facility following the conversion project. The study was conducted onsite working with engineering contractors and facility personnel.

- *Boilers and Steam System, Bakersfield, CA* – Provided onsite HAZOP/LOPA technical support for the renewable conversion of a former fossil fuel refinery in Bakersfield, CA. Following the conversion project, the utilization of the two boiler systems at the facility needed to be re-engineered to meet the requirements for renewable fuel production. This study was used as a basis to develop the Cause & Effect for the shutdown system associated with each boiler. The study also involved the detailed review of the IFC P&IDs to ensure the accurate depiction of the facility following the conversion project. The study was conducted onsite working with engineering contractors and facility personnel.
- *Coal Power Plant Selective Catalytic Reducer (SCR), Craig, Colorado* – Provided technical support for the five-year PHA involving the power plant's SCR utilizing ammonia to remove nitrogen oxides (NOx) from emissions produced while producing power to a large area of Colorado. The study focused on potential equipment failures, inadvertent operator actions, and external events that could result in hazardous consequences.

CalARP/RMP/PSM Program Developments and Updates

Mr. Camey has developed several CalARP, RMP, and PSM Programs for a number of industries and processes. As part of these efforts, he has conducted Offsite Consequence Analyses (OCA), dispersion modeling, program development, United States Environmental Protection Agency (US EPA) submittals, and review. Below is a partial list of projects for which Mr. Camey has provided CalARP/RMP/PSM Program Development/Update support:

- *Hydrogen Peroxide Production Facility, Carlin, NV* – Provided NCAPP compliance support, including Hazard Assessment / Offsite Consequence Analysis.
- *Poway Lester J. Berglund Water Treatment Plant, Poway, CA* – Provided CalARP/RMP/PSM Program Level 2 Submittal update support for the aqueous ammonia system and CalARP/RMP/PSM Program Level 3 Submittal update support for the chlorine system, including Hazard Assessment / OCA.
- *Plating and Finishing System, Whittier, CA* – Provided CalARP Program Level 1 Submittal update support for a plating and finishing system containing nitric acid, potassium cyanide, and sodium cyanide, including Hazard Assessment / OCA.
- *Ammonia Refrigeration System, Santa Ana, CA* – Provided CalARP Program Level 2 update support for an ammonia refrigeration system, including Hazard Assessment / OCA.
- *Liquid Chlorination Project, Industry, CA* – Provided CalARP/RMP/PSM Program Level 3 update support, including Hazard Assessment / OCA.

Mr. Camey has also provided support for creating procedures for the following facilities:

- *Kern Oil Firewater System, Bakersfield, CA* – Developed Process Safety Information (PSI) section for firewater system along with testing procedures for its Fire Water System Operations, Inspection & Maintenance Manual development. This process was performed using regulatory language gathered from the regulations used to design the system.

Hazard Mitigation Plans (HMP)

HMPs include a risk assessment of probable hazards, including the estimated frequency of occurrence and extent of impact. In addition, the Plans identified possible mitigation projects and examined the economic feasibility of the projects through a qualitative cost-benefit analysis. Plan development also requires public participation and neighboring agency coordination. Mr. Camey has provided technical support on HMPs for California cities and special districts.

Compliance Audits

Gas Processing Unit, Spiritwood, North Dakota – Completed a Compliance Audit for the facility that produces ethanol and processes that ethanol with a denaturant for further use. The Compliance Audit satisfied all requirements of EPA and PSM.

Oil Well Extraction, Kenai, Alaska – Completed a Compliance Audit for an upstream facility in the Kenai Peninsula. The facility's wells produce oil and gas sent to be used across the United States. RMP/PSM Prevention program requirements, site policy, documentation records, and accuracy were evaluated to ensure consistent and complete compliance for safe well activities.

CLIENT LIST

The following is a partial list of clients that Mr. Camey has managed and/or provided technical support:

Oil and Gas

- Marathon Petroleum Company
- Kern Energy
- AmeriGas Propane
- Hilcorp
- Petronas
- CITGO

Energy

- Tri-State Generation and Transmission Association
- DTE Energy

Renewable Energy

- Bakersfield Renewable Fuels (Global Clean Energy)
- Midwest Ag Energy

Municipalities and Water Treatment

- City of Poway
- City of Paramount
- City of Gardena

Manufacturing/Chemical Processing

- Evonik Active Oxygens
- Custom Alloy Sales, Inc
- Quaker City Plating
- Rolls Royce High Temperature Composites, Inc.

Ammonia Refrigeration Facilities

- Fresh Grill Foods, LLC & Brown Bag

Mineral Extraction

- Freeport-McMoRan Inc. Morenci Mine